

Docket No.: 31113/42025  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Klaus J. Wannowius et al.

Application No.: 10/580,392

Confirmation No.: 1957

Filed: November 22, 2004

Art Unit: 1616

For: Method for the Preparation of Aqueous  
Solutions of Reactive Chlorine Compounds

Examiner: Luke E. Karpinski

**DECLARATION OF DIRK KAISER, PH.D.  
PURSUANT TO 37 C.F.R. § 1.132**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

I, Dirk Kaiser, Ph.D., hereby declare that:

1. I am Managing Director of CytoTools GmbH, the assignee of the above-identified application. I am responsible for the scientific development of CytoTools GmbH and have been responsible for the same since the company's founding in 2000.
2. I received my Ph.D. in chemical engineering at the Institute for Biochemistry at Darmstadt Technical University in 2000. My Ph.D. research emphasized all kinds of cellular apoptosis and the analysis and production of chlorine-species to promote cellular proliferation.
3. I am a joint inventor of the subject matter presently claimed in the above-identified patent application and am making this declaration to provide experimental results that I understand are relevant to an obviousness rejection applied against the claims of the above-identified application.

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4. I have reviewed the above-captioned patent application and am familiar with the subject matter disclosed therein.
5. I have reviewed and am familiar with a U.S. Patent and Trademark Office (USPTO) action dated January 7, 2009, in which the USPTO commented on the application.
6. I have reviewed and am familiar with Stahl et al., International Application Publication No. WO 00/48940 ("Stahl").
7. Set forth in the attached Appendix "A" is Fig. A, which demonstrates the results obtained from tests described herein.
8. Fig. A is a mass spectrum illustrating the products obtained in accordance with the process disclosed by Stahl ("the Stahl products").
9. The Stahl products were obtained according to the following protocol:
  - (a) A gas stream containing chlorine dioxide was introduced into three washing bottles attached to each other. The washing bottles were each filled with 30 mL of a 2M NaClO<sub>2</sub> solution at pH 11 and a solution of 15 mL of 30% hydrogen peroxide in 35 mL of water, which had previously been adjusted to pH 12 by adding 4M caustic soda solution. During the introduction of the gas, the pH value was monitored with a glass electrode and was kept at pH 12 by adding 4M NaOH. When the inflow of gas led to a permanent yellow coloring, a drop of hydrogen peroxide solution was added to decolorize the yellow solution.
  - (b) The solution obtained in part (a), above, was dripped into a stirred solution of 500 g citric acid in 3 liters of water, which had previously been adjusted to pH 4.5 with 2M caustic soda solution.
  - (c) The gaseous reactive chlorine compounds formed during part

(b), above, were expelled using a strong gas stream ( $N_2$  or  $O_2$ ). The gas was collected in three washing bottles which were attached to each other and which were each filled with 50 mL 0.1M NaOH. The contents of the three washing bottles were combined and kept at pH > 10.

10. The Stahl products obtained in step (c), above, were evaluated by mass spectroscopy. As shown in Fig. A, no peak is present at m/z of 189.0. Thus, the mass spectrum demonstrates that the Stahl products do not include a compound having m/z of 189.0.
11. A m/z of 189.0 corresponds to a reactive chlorine compound having a formula  $NaCl_2O_5$ .
12. The protocol in paragraph 9 above is consistent with steps (a) to (c) of independent claim 1 of the present application.
13. Fig. 6 of the present application is a mass spectrum depicting the products obtained in accordance with process steps recited in independent claim 1.
14. Example 1 of the present application describes products and the preparation thereof in accordance with the process recited in claim 1 and according to the protocol described in paragraph 9 above, with the exception that the protocol includes an additional step (d) in which the pH of the solution was adjusted to pH 7 and a 10-fold molar excess of sodium chlorite was added.
15. The products in accordance with the claimed invention were evaluated by mass spectroscopy. As shown in Fig. 6 of the present application, a peak is present at m/z of 189.0. Thus, the mass spectrum demonstrates that the products in accordance with the claimed invention include a compound having m/z of 189.0.

16. Fig. A (Appendix A) and Fig. 6 (present application) demonstrate that the Stahl products and the products in accordance with the claimed invention differ. Specifically, the Stahl products do not include a compound having m/z of 189.0, while the products in accordance with the claimed invention include a compound having m/z of 189.0.
17. As demonstrated by the comparative data, the claimed process surprisingly and beneficially produces a compound having m/z of 189.0, corresponding to  $\text{NaCl}_2\text{O}_6$ .
- (a) At the time the invention was made, a person having ordinary skill in the art would not expect the process in accordance with the claimed invention to produce compounds having a formula  $\text{NaCl}_2\text{O}_5$ .
  - (b) Rather, at the time the invention was made, the skilled artisan would have expected to obtain peroxochlorates ( $\text{NaOOCIO}_2$ ), as disclosed by Stahl.
  - (c) Adding chlorite to the collected dissolved reactive chlorine compound (as in step (d) of claim 1) is responsible for the surprising and beneficial production of compounds having a formula  $\text{NaCl}_2\text{O}_6$ .
  - (d) Moreover, the skilled artisan would not have had an apparent reason to modify Stahl to arrive at the claimed invention because Stahl discloses that the products are "trapped" in washing bottles containing an aqueous solution of sodium hydroxide. Stahl does not disclose or suggest any further modification of the "trapped" products. Therefore, the skilled artisan would not have an apparent reason to modify Stahl to arrive at the claimed invention.

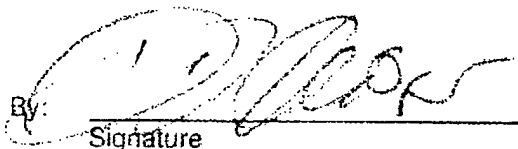
18. All statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under 18 U.S.C. § 1001 and may jeopardize the validity of the application or any patent which may issue thereon.

Respectfully submitted,

Dated:

05-May-2007

By:

  
Signature

Dr. Dirk Kaiser  
Printed Name

APPENDIX "A"

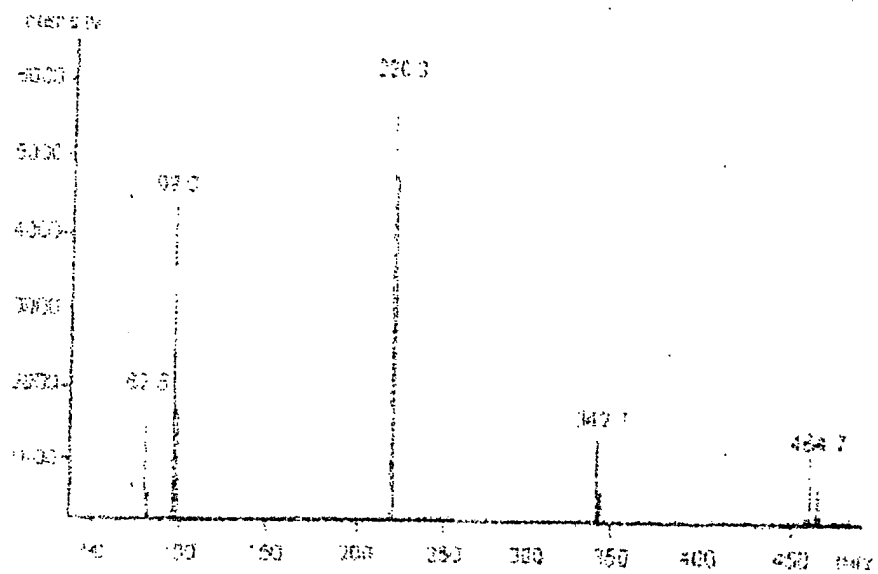


Fig. A

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